CLAIMS

1. A micro-electromechanical drive mechanism that comprises

a substrate that incorporates drive circuitry;

at least one pair of elongate actuator arms that are anchored at a fixed end to the substrate and connected to the drive circuitry, each actuator arm being of an electrically conductive material and having an active portion that defines a heating circuit that is in electrical contact with the drive circuitry to heat and expand on receipt of an electrical signal from the drive circuitry and cool and contract on termination of that signal and a passive portion that is spaced from the active portion relative to the substrate so that the actuator arm bends and straightens as a result of differential thermal expansion and contraction and an opposed moving end undergoes reciprocal arcuate movement, the actuator arms of the, or each, pair being oriented with the moving ends aligned and facing each other;

at least one pair of coupling structures that are fast with respective moving ends of the actuator; and

a working member that is fast with and interposed between the, or each, pair of coupling structures, the coupling structures being configured so that said arcuate movement is translated into substantially rectilinear movement of the working member.

2. A micro-electromechanical drive mechanism as claimed in claim 1, in which each actuator arm is of a unitary structure and of a material having a Young's modulus which is selected such that, when the active portion expands, the passive portion stores spring energy and when the active portion contracts, the spring energy is released.

3. A micro-electromechanical drive mechanism as claimed in claim 2, in which each actuator arm has a transverse profile that is shaped so that part of a volume of one of the active portion and the passive portion is interposed between the other of the active portion and the passive portion and the substrate.

4. A micro-electromechanical drive mechanism as claimed in claim 1, in which each coupling structure includes a proximal member that is fast with the moving end of its

associated actuator, a distal member that is fast with the working member and a connecting member that is fast with and interconnects the proximal and distal members, the connecting member being deformable to accommodate the arcuate movement of the moving member while the distal member moves along a substantially rectilinear path.

5. A micro-electromechanical drive mechanism as claimed in claim 4, in which each proximal member includes a pair of tongue members that extend towards an associated working member and each distal member includes a pair of tongue members that extend towards an associated proximal member such that the tongue members overlap in a common plane parallel to the substrate and each connecting member includes a rod that extends from each of the tongues towards the substrate and a plate that interconnects ends of the rods, the plate and the rods being deformable to permit arcuate movement of the proximal member and rectilinear movement of the distal member.

6. A micro-electromechanical drive mechanism as claimed in claim 1, which includes two pairs of opposed actuator arms and coupling structures.